



BR 903

OCTOBER 1992

Specification for

Electrical Requirements for

Standard Colour Light Signals



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AMENDMENTS

Amd. No.	Date	Text Affected

British Railways Board

BRITISH RAILWAYS BOARD



SPECIFICATION NO 903
ELECTRICAL REQUIREMENTS FOR STANDARD
COLOUR LIGHT SIGNALS

FOREWORD

This specification supersedes all previous issues. It is issued by:-

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Signal & Telecommunications,
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CREWE.

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Technical queries shall be referred to:-

The Director of S & T Engineering
British Railways Board
Macmillan House
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London
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REFERENCES

Reference in this specification is made to:-

British Railways Specification	872	-	Flame Retardent Compound Insulated Cables for Railway Signalling
	924A	-	Air Cooled Power Transformers for Railway Signalling
	930	-	Miniature Tractive Armature DC Neutral Line Relay, Plug-In Type, for Railway Purposes
	940A	-	Miniature Tractive Armature DC Single Wound Lamp Proving Relay, Plug-In Type for Railway Signalling Purposes
	941A	-	Miniature Tractive Armature AC Lamp Proving Relay, Plug-In Type for Railway Signalling Purposes
	967	-	Railway Signalling Apparatus Environmental Conditions

British Standards	469	-	Electric Lamps for Railway Signalling
	4G178	-	Crimped Joints for Aircraft Electrical Cables and Wires.
British Railways Drawings	BRS-SE37/1		Terminal Block 2BA (3/4 Pitch) Six Pair
	BRS-SE54		Terminal Block 2BA (3/4 Pitch) Assembly on Terminal Stems
	BRS-SE81/1		Colour Light Signals Individual Unit Aspect Assembly.

Where this Specification requires reference to British Standards, British Railways Specifications and Drawings the latest issue shall apply unless specially stated. It is the responsibility of the Manufacturer, Supplier or User to ensure that the latest issue of this Specification and other relevant Specifications and Drawings are obtained and complied with.

For the purpose of this Specification the Engineer is the Director of Signal & Telecommunications Engineering, British Railways Board, or his appointed representative.

C O N T E N T S

1. SCOPE
2. GENERAL
3. LAMP
4. LAMP HOLDER
5. LAMP LIGHTING TRANSFORMER.
6. FILAMENT CHANGEOVER RELAY, FOR NON FLASHING ASPECTS.
7. FILAMENT CHANGEOVER UNIT, FOR FLASHING ASPECTS.
8. LAMP PROVING RELAY
9. WIRING AND TERMINATIONS.
10. FLASH TEST AND INSULATION RESISTANCE
11. ENVIRONMENTAL
12. LABELLING.
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APPENDICES

- A. CONNECTIONS TO FILAMENT CHANGEOVER RELAY
- B. WIRING ARRANGEMENT FOR SIGNAL HEAD UNITS FIGS. 1 to 6.
- C. FLASHING ASPECT FILAMENT CHANGEOVER UNIT. MAXIMUM OVERALL AND FIXING DIMENSIONS.

1. SCOPE

- 1.1 This specification covers the signal head wiring and the various items of equipment required for a complete electrical system for lighting and proving lamps in colour light signals.

This specification will attempt to ensure that all of the items and the wiring will be compatible regardless of the supplier.

- 1.2 The items of equipment covered by this specification are:-

- 1.2.1 Lamp.
- 1.2.2 Lamp Holder.
- 1.2.3 Lamp Lighting Transformer.
- 1.2.4 Filament Changeover Relay, for non flashing aspects.
- 1.2.5 Filament Changeover Unit, for non flashing aspects.
- 1.2.6 Lamp Proving Relay.
- 1.2.7 Signal Head Wiring & Terminals.

2. GENERAL

- 2.1 Unless stated otherwise equipment supplied to this specification shall have a minimum service life of 25 years.
- 2.2 All metallic parts which are liable to corrosion shall be given a corrosion resistant finish. The finish shall protect the component to which it is applied throughout the specified service life under the environmental conditions of Clause 11.
- 2.3 Any proposed variation or amendment to this specification shall be submitted to and approved, in writing, by the Engineer prior to its use.
- 2.4 Manufacturers and suppliers shall ensure that the equipment complies with the relevant parts of the Health and Safety at Work Act, 1974.

3. LAMP

- 3.1 The lamp for colour light signals shall be a type SL35, 12 volts, 24/24 watts to BS469.

4. LAMP HOLDER

- 4.1 The lamp holder shall comply with BR Drawing No. BRS-SE81/1.
- 4.2 The lamp holder shall be provided with 2BA terminal studs on which to terminate the signal head wiring.

5. LAMP LIGHTING TRANSFORMER

- 5.1 The lamp lighting transformer for AC lit signals is housed in the signal head. A separate transformer is required for each signal aspect.

The transformer shall generally comply with BR924A except as specified below.

- 5.2 The transformer assembly shall comprise the transformer and a plate, of a suitable insulating material. The plate shall carry the transformer tapping terminals and the octal base for the filament changeover relay/unit.
- 5.3 The nominal input voltage will be 110 volts 50 Hz. The input voltage has an overall variation of +10%, -20% of the nominal value and can be expected to vary by +10% of the value of each tapping within the overall range.

The frequency can be expected to vary by + 4%.

- 5.4 The transformer shall have the following tappings:-

Primary (input) 0/6/86/98/110 volts
Secondary (output) 0/0.5/11/12/14 volts

The preferred method of achieving both the input and output voltage adjustment is to terminate each of the tap points to an electronically separate 2BA terminal stud. The terminals shall comply with Clause 9.2. Any proposed alternative method of adjustment shall be submitted to and approved, in writing, by the Engineer prior to its use.

- 5.5 The transformer is required to supply a lamp and relay as detailed in clauses 3, 6 and 7. The transformer shall be rated for continuous operation supplying 130% nominal power at 110% of nominal input voltage.
- 5.6 The voltage regulation no load to full load at unity power factor shall not exceed 10%.
- 5.7 The magnetising, no load primary, current shall not exceed 0.1 amp with 110 volts at 50 Hz connected between the 6 and 86 volt tappings.
- 5.8 In addition to the details required in Clause 12 the transformer shall be labelled with the following details:-

Rated VA;
Frequency;
Primary Rated Voltage;
Secondary Rated Full Load Voltage;
Class of Insulation.

The terminals, on the plate, shall be labelled with the appropriate value of the tapping voltage, the primary values shall be prefixed with 'T' and the secondary values shall be prefixed with 't'.